

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A computer-based method for identifying conserved peptide motifs useful as drug targets for use in a host organism, wherein said method comprises the steps of:

i) computationally generating overlapping peptide sequences from selected pathogenic organisms of length 'N',

ii) computationally sorting the peptide sequences of length 'N' according to amino acid sequence,

iii) computationally matching the sorted peptide sequences of length 'N' of the selected pathogenic organisms to produce matched common peptide sequences,

iv) computationally locating the matched common peptide sequences in their corresponding protein sequences to provide locations of said matched common peptide sequences and subsequently labeling the matched common peptide sequences with their origin and location;

v) computationally joining overlapping common peptide sequences to obtain extended conserved peptide sequences; and

vi) comparing said extended conserved peptide sequences obtained in step (v) to host organism protein sequences to determine which of said conserved peptide sequences from said selected pathogenic organisms are not present in host proteins, ~~wherein said conserved peptide sequences which are not present in host proteins are useful as drug targets ; and~~

vii) communicating said conserved peptide sequences from said selected pathogenic organisms not present in said host proteins to a user.

2. (Previously presented) The method of claim 1, wherein 'N' is at least 4.

3. (Previously presented) The method of claim 1 wherein the selected pathogenic organisms include at least one of: Mycoplasma pneumoniae, Helicobacter pylori, Hemophilus influenzae, Mycobacterium tuberculosis, Mycoplasma genitalium, Bacillus subtilis, and Escherichia coli.

4. (Currently amended) The method of claim 1, wherein the extended conserved peptide sequences comprise one or more of the following sequences:

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|----------------------------------|---|
| 1. AAQSIGEPGTQLT (SEQ ID NO:1) | 35. KMSKSKGN (SEQ ID NO:35) |
| 2. AGDGTITAT (SEQ ID NO:2) | 36. KMSKSLGN (SEQ ID NO:36) |
| 3. AGRHGNKG (SEQ ID NO:3) | 37. KNMITGAAQMDGAIL (SEQ ID NO:37) |
| 4. AHIDAGKTTT (SEQ ID NO:4) | 38. KPNSALRK (SEQ ID NO:38) |
| 5. CPIETPEG (SEQ ID NO:5) | 39. LFGGAGVGKTV (SEQ ID NO:39) |
| 6. DEPSIGLH (SEQ ID NO:6) | 40. LGPSGCGK (SEQ ID NO:40) |
| 7. DEPTSALD (SEQ ID NO:7) | 41. LHAGGKFD (SEQ ID NO:41) |
| 8. DEPTALDVT (SEQ ID NO:8) | 42. LIDEARTPLISG (SEQ ID NO:42) |
| 9. DHAGIATQ (SEQ ID NO:9) | 43. LLNRAPTLH (SEQ ID NO:43) |
| 10. DHPHGGGEG (SEQ ID NO:10) | 44. LPDKAIDLIDE (SEQ ID NO:44) |
| 11. DLGGGTFD (SEQ ID NO:11) | 45. LPGKLADC (SEQ ID NO:45) |
| 12. DVLDTWFSS (SEQ ID NO:12) | 46. LSGGQQQR (SEQ ID NO:46) |
| 13. ERERGITI (SEQ ID NO:13) | 47. MGHVDHGKT (SEQ ID NO:47) |
| 14. ERGITITSAAT (SEQ ID NO:14) | 48. NADFQDQMAVH (SEQ ID NO:48) |
| 15. ESRRIDNQLRGR (SEQ ID NO:15) | 49. NGAGKSTL (SEQ ID NO:49) |
| 16. FSGGQQRQR (SEQ ID NO:16) | 50. NLGKRV (SEQ ID NO:50) |
| 17. GEPGVGKTA (SEQ ID NO:17) | 51. NTDAEGR (SEQ ID NO:51) |
| 18. GFDYL RDN (SEQ ID NO:18) | 52. PSAVGYQPTLA (SEQ ID NO:52) |
| 19. GHNLQEHS (SEQ ID NO:19) | 53. QRVALLARA (SEQ ID NO:53) |
| 20. GIDLGTTS (SEQ ID NO:20) | 54. QRYKGLGEM (SEQ ID NO:54) |
| 21. GINLLREGLD (SEQ ID NO:21) | 55. RDGLKPVHRR (SEQ ID NO:55) |
| 22. GIVGLPNVGKS (SEQ ID NO:22) | 56. SALDVSIQA (SEQ ID NO:56) |
| 23. GKSSILNA (SEQ ID NO:23) | 57. SGGLHGVG (SEQ ID NO:57) |
| 24. GLTGRKIIVDTYG (SEQ ID NO:24) | 58. SGSGKSSL (SEQ ID NO:58) |
| 25. GPPGTGKTLA (SEQ ID NO:25) | 59. SGSGKSTL (SEQ ID NO:59) |
| 26. GPPGVGKT (SEQ ID NO:26) | 60. SVFAGVGERTREGND (SEQ ID NO:60) |
| 27. GSGKTTLL (SEQ ID NO:27) | 61. TGRTHQIRVH (SEQ ID NO:61) |
| 28. GTRIFGPV (SEQ ID NO:28) | 62. TGVS GSGKS (SEQ ID NO:62) |
| 29. IDTPGHVDFT (SEQ ID NO:29) | 63. TSGGEAQR (SEQ ID NO:63) |
| 30. ILAHIDHGKSTL (SEQ ID NO:30) | 64. TNKYAEGYP (SEQ ID NO:64) |
| 31. INGFRIGR (SEQ ID NO:31) | 65. TPRS NPATY (SEQ ID NO:65) |
| 32. IREGRTVG (SEQ ID NO:32) | 66. VEGDSAGG (SEQ ID NO:66); <u>and</u> |
| 33. IVGESGSGKS (SEQ ID NO:33) | 67. VRKRPGMYIG (SEQ ID NO:67) |

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34. KFSTYATWWI (SEQ ID NO:34)

5. (Canceled)

6. (Currently amended) The method of any one of claims 1-4 wherein the conserved peptide sequences are found within the sequences of at least one of the following proteins:

- I DNA DIRECTED RNA POLYMERASE BETA CHAIN
- II EXONUCLEASE ABC SUBUNIT A
- III EXONUCLEASE ABC SUBUNIT B
- IV DNA GYRASE SUBUNIT B
- V ATP SYNTHASE BETA CHAIN
- VI S-ADENOSYLMETHIONINE SYNTHETASE
- VII GLYCERALDEHYDE 3-PHOSPHATE DEHYDROGENASE
- VIII ELONGATION FACTOR G (EF-G)
- IX ELONGATION FACTOR TU (EF-TU)
- X 30S RIBOSOMAL PROTEIN S12
- XI 50S RIBOSOMAL PROTEIN L12
- XII 50S RIBOSOMAL PROTEIN L14
- XIII VALYL tRNA SYNTHETASE
- XIV CELL DIVISION PROTEIN FtsH HOMOLOG
- XV DnaK PROTEIN (HSP70)
- XVI GTP BINDING PROTEIN LepA; and
- XVII OLIGOPEPTIDE TRANSPORT ATP BINDING PROTEIN OPPF.

7. (Currently amended) The method of claim 1, wherein step (iii) comprises:
selecting organism names from a menu;

iteratively comparing peptide sequences of a first organism to sorted peptide sequences of a second organism; and[[,]]

~~for matching sequences~~; writing matched sequences to a first file for the first organism and to a second file for the second organism.

8. (Currently amended) The method of claim 1 wherein step (iv) comprises:
selecting protein sequences;

iteratively ~~comparing~~ locating matched peptide sequences ~~to in the selected~~
protein sequences; and

if the matched peptide is found in [[a]] one of the selected protein ~~sequence~~
sequences, labeling the matched peptide sequence in a file associated with the selected
protein sequence with: a) a protein identification number (PID), b) a location in the
protein sequence, and c) a name of a pathogenic organism chosen from the group of
selected pathogenic organisms of step iii).

9. (Currently amended) The method of claim 1, wherein said overlapping common
peptide sequences in step (v) comprises are computationally joined by:

iteratively comparing matched peptide sequences on matched peptide
locations;

determining overlapping matched common peptides; and

determining extended conserved peptide sequences based on overlapping
matched ~~peptide sequences~~ common peptides.

- 10-12. (Canceled)